



# **NAVAL POSTGRADUATE SCHOOL**

**MONTEREY, CALIFORNIA**

**Maritime Domain Awareness (MDA)  
Process Engineering Workshop  
15-17 January 2008  
Summary Report**

by

Jared Freeman, Aptima, Inc.  
Nancy Heacox, Pacific Sciences and Engineering  
Douglas MacKinnon, NPS

18 January 2008

**Approved for public release; distribution is unlimited.**

Prepared for: PEO C4I

THIS PAGE INTENTIONALLY LEFT BLANK

NAVAL POSTGRADUATE SCHOOL  
Monterey, California 93943-5000

Daniel T. Oliver  
President

Leonard A. Ferrari  
Executive Vice President and  
Provost

This report was prepared for and funded by:

PEO C4I, Commanding Officer,  
Space and Naval Warfare, Systems Center – Pacific,  
53560 Hull Street  
San Diego, CA 93152-5001

Reproduction of all or part of this report is authorized.

This report was prepared by:

---

Jared Freeman  
Senior Vice President  
Aptima, Inc.

---

Douglas MacKinnon  
Research Associate Professor

---

Nancy Heacox  
Research Scientist  
Pacific Science and Engineering, Inc.

Reviewed by:

Released by:

---

Dan Boger, Chairman  
Department of Information Science

---

Dan Boger,  
Acting Associate Provost  
and Dean of Research

THIS PAGE INTENTIONALLY LEFT BLANK

<b>REPORT DOCUMENTATION PAGE</b>			Form approved OMB No 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> 18 JAN 2008	<b>3. REPORT TYPE AND DATES COVERED</b>	
<b>4. TITLE AND SUBTITLE</b> Maritime Domain Awareness (MDA) Process Engineering Workshop 15-17 January 2008 Summary Report			<b>5. FUNDING</b> N0003907WRFNM21	
<b>6. AUTHOR(S)</b> Jared Freeman, Douglas J. MacKinnon, Nancy Heacox				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Aptima, Inc. Information Science Department 1726 M Street, NW, Suite 900 1411 Cunningham Road, GW 3008 Washington, DC 20036 Naval Postgraduate School Monterey CA 93943-5000  Pacific Science & Engineering, Inc. 9180 Brown Deer Road San Diego, CA 92121			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>  NPS-IS-08-007	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> PEO C4I Commanding Officer Space and Naval Warfare Systems Center – Pacific 53560 Hull Street San Diego, CA 93152-5001			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b>				
<b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b>  Approved for public release; distribution is unlimited.			<b>12b. DISTRIBUTION CODE</b>  A	
<b>13. ABSTRACT (Maximum 200 words.)</b>				
<b>14. SUBJECT TERMS</b>			<b>15. NUMBER OF PAGES</b>  48	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b>  UNCLASS	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b>  UNCLASS	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b>  UNCLASS	<b>20. LIMITATION OF ABSTRACT</b>  UU	

## Table of Contents

1. Overview .....	1
2. MDA Process .....	1
3. Utility of Spiral 1 Technologies for MDA Activities .....	2
4. Barriers to Fielding Spiral 1 Technologies .....	5
Appendix A: MDA Workflow Revision Summary from the PEW .....	8
Appendix B: MDA Workflow v12 Graphs.....	11
Appendix C: MDA OV-6c.....	14
Appendix D: Technology Descriptions .....	18
Appendix E: Attributes of MDA Activities.....	21
Initial Distribution List .....	41

## 1. Overview

This document reports findings from an MDA Process Engineering Workshop (PEW) hosted by the Naval Postgraduate School 15-17 January 2008. The objectives of the PEW were to:

- Refine, extend, and validate a process model of Maritime Domain Awareness
- Define attributes of the activities that constitute MDA, specifically information requirements, processing activities, products, and resource (time, manning) requirements
- Specify which MDA activities may benefit from Spiral 1 technologies, and develop concepts for assessing that utility
- Identify barriers to fielding MDA Spiral 1 technologies

Representatives of the following organizations participated in the PEW: ASN RDA, C3F, COTF, Dept. of the Under Secretary of the Navy, DISA, HFE LLC, JITIC, METRON, MIFCLANT, MIFCPAC, NAVCENT, NAVNETWARCOM, NCIS, NORTHCOM, NPS, NRL, NWDC, ONI, OPNAV, PMW 120, and SPAWAR. Also participating were subject matter experts (SMEs) from several of the MDA Spiral 1 technologies, domain experts ('gray beards'), representatives from the Trident Warrior 2008 (TW08) operational experiment where many of the MDA Spiral 1 technologies will be assessed, and members of the assessment team (NPS, Aptima, Pacific Sciences & Engineering, WBB Inc.).

The agenda for the PEW was as follows:

- The hosts presented the objectives, above, to participants.
- Greybeards framed the MDA challenge
- Two MDA scenarios were presented to help participants test an MDA workflow diagram (generated in interviews at ONI, NAVCENT, and elsewhere) against specific events
- Participants reviewed and commented on a draft MDA workflow
- Participants mapped Spiral 1 technologies to MDA activities in the workflow
- Participants described concerns about (potential barriers to) MDA Spiral 1 technology fielding

## 2. MDA Process

This chapter reports refinements and extensions to the MDA process model, which consists of a precedence graph (or workflow) of MDA activities, and definitions of the activities in that graph.

## MDA Activity Workflow

The PEW participants reviewed MDA OV-6c workflow diagrams: "NAVCENT MDA Process" (as well as a summary diagram for this workflow (version 11)), "Provide MDA Info-NMIC", and "RFI Processing-NMIC". The participants recommended revisions to the activities, activity-activity precedence (links), and clustering of activities. The number of revisions was modest, and participants indicated that these workflows are generally correct.

PEW participants recommended revisions to the NAVCENT MDA Process workflow to generalize it that it potentially serves MOCs and organizations other than NAVCENT.

Seven new activities were introduced. These activities were distributed across the OODA loop of MDA activities (i.e., they were not concentrated in any one region of activity). These seven activities were additions to those defined in interviews with the NAVCENT MOC in Fall 2007, when the NAVCENT MDA Process workflows were developed. These activities either are conducted at other operations centers or are likely to be conducted there, according to the PEW participants.

Twelve activities were renamed to clarify their meaning, or were reassigned from NAVCENT-specific organizational nodes (e.g., Fifth Fleet) to more generic organizational nodes (e.g., Fleet Assets).

One activity –190 "MOC: Forward Biometrics" – was deleted because it was a routine copying of information to the MOC for situational awareness and record keeping, but it did not produce action.

These revisions were largely or completely implemented in updated DoDAF diagrams by WBB Inc. as of 29 January 2008. This update entailed decomposing some of the activities below into separate activities per WBB's judgment as architects and Navy process experts. The revision of the MDA workflow is documented in **Appendix A: MDA Workflow Revision Summary from the PEW**, **Appendix B: MDA Workflow v12 Graphs**, and **Appendix C: MDA OV-6c**.

## Activities

PEW participants provided new insight into aspects of many of the MDA processes in response to questions concerning: activity purpose, triggers, input, processing, output, frequency, and process pitfalls. These data are incomplete. Not all processes were discussed. Not all questions were addressed for those processes that were discussed. These data are presented in Appendix E: Attributes of MDA . They are extensive and represent the raw data collected at the PEW.

## 3. Utility of Spiral 1 Technologies for MDA Activities

The PEW Participants assessed the utility of Spiral 1 technologies (defined in **Appendix D: Technology Descriptions**) for each MDA activity (see Table 1). In general, PEW participants asserted that each organizational node that had access to any Spiral 1 technologies would use all of those technologies in most of its activities.



The activities (below) that involve ONI and ONA make heavy use of Spiral 1 technologies because (1) many of the Spiral 1 technologies are designed to support intelligence analysis and (2) many of these technologies will be inserted at ONI and ONA.

Activities conducted by COPS, FOPS, the MOC Director, and BWC are not expected to benefit from many of the technologies, according to PEW participants. One exception is “110 MOC Director: Define CDRs Estimate & COA”, a task in which the MOC director may draw on the Common Intelligence Picture (CIP), Common Operational Picture (COP), and other data sources to develop, critique, and select courses of action. We note that this assessment by PEW participants conflicts somewhat with the assessment of the NAVCENT MOC. In particular, NAVCENT anticipates that (1) the BWC would use FASTC2AP and SMS/JPSC2 to “100: Assess Tactical Asset Availability” and the IWO would use FASTC2APL to “120: Issue RFI.” In general, NAVCENT and the PEW agreed in their assessment that ONA would use a variety of Spiral 1 technologies in its intelligence analyses. NAVCENT indicated that CMA, MAGNET, FASTC2AP, Google Earth, and SMS/JPSC would be particularly useful to ONA. These differences between NAVCENT and PEW participants are indicated with a \* in the table below.

Activities executed by Fleet assets make almost no use of the technologies in the table below, because the Fleet activities do not require most of the analysis functions of these technologies or because Fleet assets are not expected to receive them. E-MIO is a notable exception; Fleet assets will receive E-MIO and will benefit from it, per the table, below.

Note that this table does not include mappings of technology to activities for several initial, intelligence generation activities conducted by specific intelligence shops: 10: MARLO: Intel, 20: CIFIC: Intel, 30: NCIS: Intel, 45: COCOM: MOTR, 50: Intl Maritime Bureau: Intel.

Table 1: The utility of Spiral 1 technologies for each MDA activity

Activities	CMA	TAANDEM	MAGNET	FastC2AP	Global Trader	Tripwire	E-MIO Wireless	Google Apps & Chat	Google Earth	SMS/JPSC2	LInX	Austr AIS
40: tbd#40: ONI: Intel	X	X	X	Tbd	X	X		Tbd	Tbd	X		Tbd
55: tbd#55: ONA: Nominate potential VOI	X	*X	X	X					*	*		
60: 5806: ONA: Validate/(Re)Prioritize VOI	X		X	*		*X		*X	X	*		
70: 5807: MOC Director: Receive/Decide/Route VOI									X			
80: 5816: COPS: Process VOI												

90: 5821: FOPS: Process VOI												
100: 6375: BWC: Assess Tactical Asset Availability				*						*		
110: 6384: MOC Director: Define CDRs Estimate & COA	X	X		X		X		X	X		X	
112: tbd#112: CNO/NOO: Approve COA	X							X	X			
115: 6627: MOC: Coordinate MOC-to-MOC Handoff	X							X	X			
120: 6521: IWO: Issue RFI				*								
125: tbd#125: ONI issues RFI to MOC	X	X	X	X	X	X		X	X		X	X
130: 5835: ONA: Process RFI (Issue, Fulfill, Assess Fulfilled)	X	*X	X	X	*X	*X		*X	X	*	*X	*X
140: 5283: ONI: Process RFI (Issue, Fulfill, Assess Fulfilled)	X	X	X	X	X	X		X	X	X	X	X
150: tbd#150: NCIS, CIFC, MARLO, MIFCPAC, NGA: Process RFI								X	X	X	X	
160: 5828: BWC: Communicate Mission Orders												
170: 6391: Fleet Asset: Plan & Direct VBSS Mission												
175: tbd#175: Fleet Asset: ISR Data Collection												
180: 6407: Fleet Asset: Take Biometrics/Boarding Data							X					
200: 6422: BFC: Analyze Biometrics												
205: tbd#205: ONI: Analyze biometric findings					X	X					X	
207: tbd#207: NGIC:Store biometric report												
210: 6436: ONI: Analyze Boarding Data	X	X	X	X	X	X					X	
220: 8321: Fleet Asset: Receive Boarding Data Analysis							X					
230: 6431: ONA: Anaylyze Findings	X	*X	X	X	*X	*X		*X	X	*	*X	*X
240: 6496: Coalition: Execute VBSS Mission												

250: 6416: COPS: Monitor VBSS												
260: 6456: COPS: Recommend Change Mission/Revision of CAT Level												
270: 6461: COPS: Recommend Mission Complete												
280: 6442: ONA: Monitor Vessel of Interest on Watch List	X	*X	X	X	*X	*X		*X	X	X	*X	*X

Note: An “X” in this table indicates that the activity would benefit from the Spiral 1 technology in the opinion of PEW participants. A “\*” indicates that the assessment by NAVCENT MOC is opposite a PEW assessment.

The assessments represented by this table, and comments made during the technology assessment process have implications for training and for the assessment of Spiral 1 technologies:

**Training** will be needed to ensure that operators can use Spiral 1 technologies competently in activities that benefit from them. That training should be activity specific, and it may be necessary that it be MOC-specific given that the mission context of these activities may shape the way operators use the technologies.

**Technology assessments** should focus largely on the effects of Spiral 1 insertion on (1) access to information (that was previously inaccessible by the performing entity), (2) speed of decision making, and (3) accuracy of decision making. Note that a given technology might increase or decrease performance. For example, CMA data access might increase the speed of decision making involving highly focused searches for information, and it might slow decision making when less focused research must be conducted across a very large number of databases. Decisions might become more accurate in either case, or less accurate if sources conflict. Almost all of comments by participants concerning technology effects fell into these three categories; there were few, if any, more specific claims made; and no performance standards or benchmarks were cited in the limited time (about 2.5 hours) during which participants focused on these assessments.

#### 4. Barriers to Fielding Spiral 1 Technologies

Participants raised a number of concerns about the process of fielding Spiral 1 MDA technologies. Many of these concerns are typical for a technology insertion program. At a minimum, SPAWAR may want to re-articulate how it is addressing these and related concerns.

1. Customization of MOCs
  - a. Organizational structures and missions (that compete with MDA) vary between MOCs. MDA TTPs need to be sufficiently flexible to accommodate

these differences. Alternatively, a variety of TTPs (e.g., for small vs. large TOCs) may be needed.

## 2. Manning

- a. Current Navy guidance does not require a reduction in manning resulting from implementation of Spiral 1 technologies. NAVCENT and PACFLEET have stated that they will require additional staff to operate and maintain the technologies.

## 3. Technology capability

- a. Some Spiral 1 technologies are prototypes. In at least one case, the technology SME warns that these technologies may not be sufficiently robust for use by operational forces (e.g., false alarm rates may be too high), and that their proper place for now is at reachback institutions (such as NMIC/ONI) that have the backup capacity to overcome these potential failures.

## 4. Training

- a. NAVCENT and PACFLEET have expressed concern that training products be delivered with the systems, and that this training address their specific applications of the technology..

## 5. Technology Installation

- a. Standardization: The unique IS environments across the fleet will present a challenge technology installers.
- b. Physical capacity: Some sites do not have the physical space to accommodate additional technologies, particularly if each technology is delivered on a separate server. NORTHCOM is a case in point. It can expand its IS spaces for new servers only by blasting additional rooms into the mountain.
- c. Power capacity: The old infrastructure at some sites constrains insertion. ONI, for examples, requires additional electrical power for every significant technology insertion. Delivery of additional power can take half a year or more.

## 6. Testing

- a. Metrics are needed to assess effects of technology insertion relative to current state. Unfortunately, there are few if any published standards that define the effectiveness of current solutions in operations. (Standards for the Navy Task List pertain to training, not operational use, for example).
- b. A sufficiently detailed scenario is needed to drive testing. This scenario must systematically address the variety of MDA data types (vessel, people, cargo, etc.), reporting products, node interactions, and time course of activity in a problem that involves discovery, analysis, and prosecution of VOIs. Particularly important challenges in MDA are: ISR management, collection planning, decisions regarding opposed and unopposed boardings, tracking

neutrals. In addition, scenario designers should consider events in which multiple vessels collaborate in a threat incident, either through cargo transfer between vessels or by synchronized tactical actions of two or more vessels. TW08 is developing a scenario using systematic methods.

7. Accreditation

- a. ONI's information systems division has indicated a concern that new technologies be properly accredited, and warns that this process takes months to accomplish.

8. Process Analysis

- a. Additional detail is needed concerning intelligence analysis processes (monitor, collect, fuse, analyze, and disseminate). This analysis is being conducted independently by ONI, but that process has only recently begun (e.g., analysis of one day shop was completed as of November 2007) and so the results may not be available to support Spiral 1 testing.
- b. The MDA workflow should be aligned with the MHQ wMOC process architecture. This was successfully addressed in a Process Alignment Workshop 29 January 2008.

## Appendix A: MDA Workflow Revision Summary from the PEW

Table 2 (below) lists all nodes in version 12 (v12) of the MOC MDA Process diagram. New, renamed, and reassigned activities are flagged. The corresponding DoDAF diagram lists additional activities, many of which are decompositions of these nodes.

Each activity label, below consists of several elements:

- Numeric identifier from v11 or v12 workflow diagram
- Numeric identifier from DoDAF XML output, based on current diagrams (or tbd# if the node is new or does not currently appear in the DoDAF database )
- Name of the entity that executes the activity
- Description of the activity

Table 2: Revised MDA activities

Revision	Activity	OODA Phase
	10: tbd#10: MARLO: Intel	Observe & Orient
	20: tbd#20: CIFC: Intel	Observe & Orient
	30: tbd#30: NCIS: Intel	Observe & Orient
	40: tbd#40: ONI: Intel	Observe & Orient
New	45: tbd#45: COCOM: MOTR	Observe & Orient
	50: tbd#50: Intl Maritime Bureau: Intel	Observe & Orient
New	55: tbd#55: ONA: Nominate potential VOI	Observe & Orient
renamed	60: 5806: ONA: Validate/(Re)Prioritize VOI	Observe & Orient
renamed	70: 5807: MOC Director: Receive/Decide/Route VOI	Observe & Orient
renamed	80: 5816: COPS: Process VOI	Observe & Orient
renamed	90: 5821: FOPS: Process VOI	Observe & Orient
	100: 6375: BWC: Assess Tactical Asset Availability	Decide
renamed	110: 6384: MOC Director: Define CDRs Estimate & COA	Decide
new	112: tbd#112: CNO/NOO: Approve COA	Decide
	115: 6627: MOC: Coordinate MOC-to-MOC Handoff	Act
	120: 6521: IWO: Issue RFI	Observe & Orient
new	125: tbd#125: ONI issues RFI to MOC	Observe & Orient
renamed	130: 5835: ONA: Process RFI (Issue, Fulfill, Assess Fulfilled)	Observe & Orient

renamed	140: 5283: ONI: Process RFI (Issue, Fulfill, Assess Fulfilled)	Observe & Orient
renamed	150: tbd#150: NCIS, CIFIC, MARLO, MIFCPAC, NGA: Process RFI	Observe & Orient
	160: 5828: BWC: Communicate Mission Orders	Act
renamed	170: 6391: Fleet Asset: Plan & Direct VBSS Mission	Act
new	175: tbd#175: Fleet Asset: ISR Data Collection	Act
renamed	180: 6407: Fleet Asset: Take Biometrics/Boarding Data	Act
	200: 6422: BFC: Analyze Biometrics	Observe & Orient
new	205: tbd#205: ONI: Analyze biometric findings	Observe & Orient
new	207: tbd#207: NGIC:Store biometric report	Observe & Orient
	210: 6436: ONI: Analyze Boarding Data	Observe & Orient
renamed	220: 8321: Fleet Asset: Receive Boarding Data Analysis	Act
	230: 6431: ONA: Analyze Findings	Observe & Orient
renamed	240: 6496: Coalition: Execute VBSS Mission	Act
	250: 6416: COPS: Monitor VBSS	Observe & Orient
	260: 6456: COPS: Recommend Change Mission/Revision of CAT Level	Decide
	270: 6461: Recommend Mission Complete	Decide
	280: 6442: ONA: Monitor Vessel of Interest on Watch List	Observe & Orient

### MDA Process: Revised activity precedence relationships (links)

Twenty-three new precedence relationships among activities were defined. In the following, complete list of links, these new arcs are flagged with a \*. This arc list and the activity list, above, are sufficient to generate the revised MOC MDA Process diagram (see Appendix B: ).

10 -> 60, 20 -> 60, 30 -> 60, \*30 -> 40, 40 -> 60, \*40 -> 45, \*45 -> 60, 50 -> 60, \*55 -> 60, 60 -> 70, 60 -> 80, 70 -> 80, 70 -> 90, \*70 -> 130, 80 -> 100, 80 -> 130, 90 -> 130, 90 -> 100, 100 -> 110, 100 -> 120, 110 -> 115, 110 -> 160, \*110 -> 112, \*112 -> 110, 120 -> 130, 120 -> 170, 120 -> 100, \*125 -> 130, \*130 -> 125, 130 -> 140, 130 -> 150, \*130 -> 70, \*130 -> 80, \*130 -> 90, 140 -> 130, \*140 -> 150, \*150 -> 140, 150 -> 130, 160 -> 170, 160 -> 240, 170 -> 180, 170 -> 220, 170 -> 250, \*170 -> 175, \*175 -> 250, \*180 -> 190, \*180 -> 200, \*200 -> 180, 200 -> 190, \*200 -> 205, 200 -> 230, \*205 -> 207, \*207 -> 60, 210 -> 220, 220 -> 210, 230 -> 250, 240 -> 250, 250 -> 120, 250 -> 260, 250 -> 270, 260 -> 110, 270 -> 280, 270 -> 230, \*270 -> 110

Three links were deleted from the MOC MDA Process diagram (v11) at the recommendation of PEW participants: 190 -> 180, 190 -> 200, 200 -> 210.

## Boarding Process

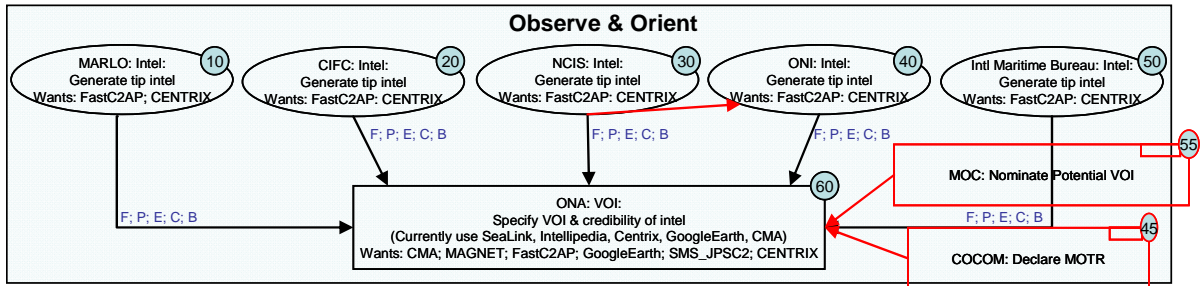
A representative from NCIS recommended that the following changes be made to the workflow diagram for Boarding Process:

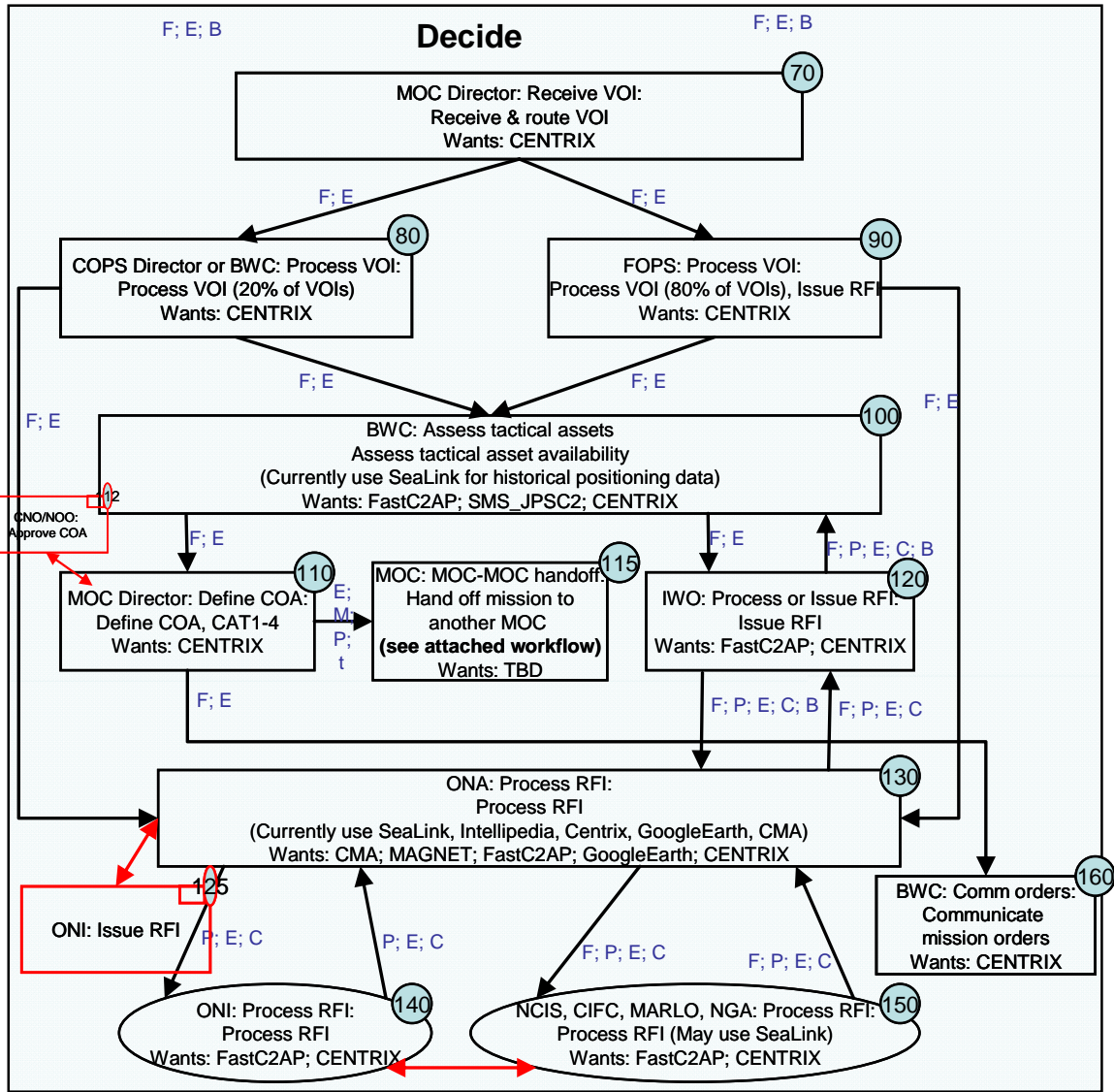
- Delete “350: NCIS Analyze Boarding Data.” There is no such task.
- Remove references to LINX technology from activities “300: Boarding intelligence available on SEAPORT”, “410: US ship executes VBSS”, and “420: Coalition ship executes VBSS”.

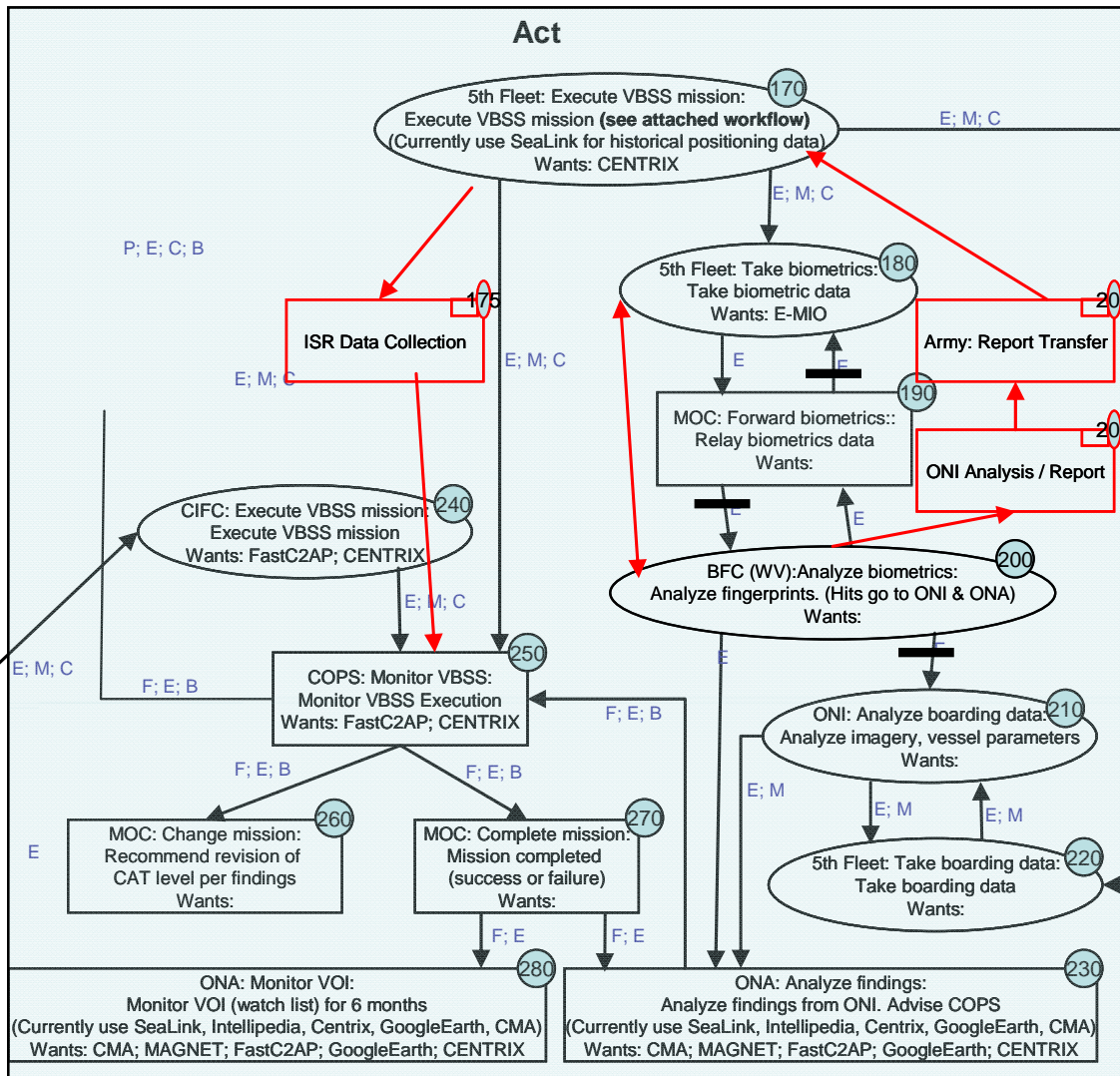


## Appendix B: MDA Workflow v12 Graphs

The following graphs capture many of the revisions (marked in red) to the workflow in a format that is easy to read.



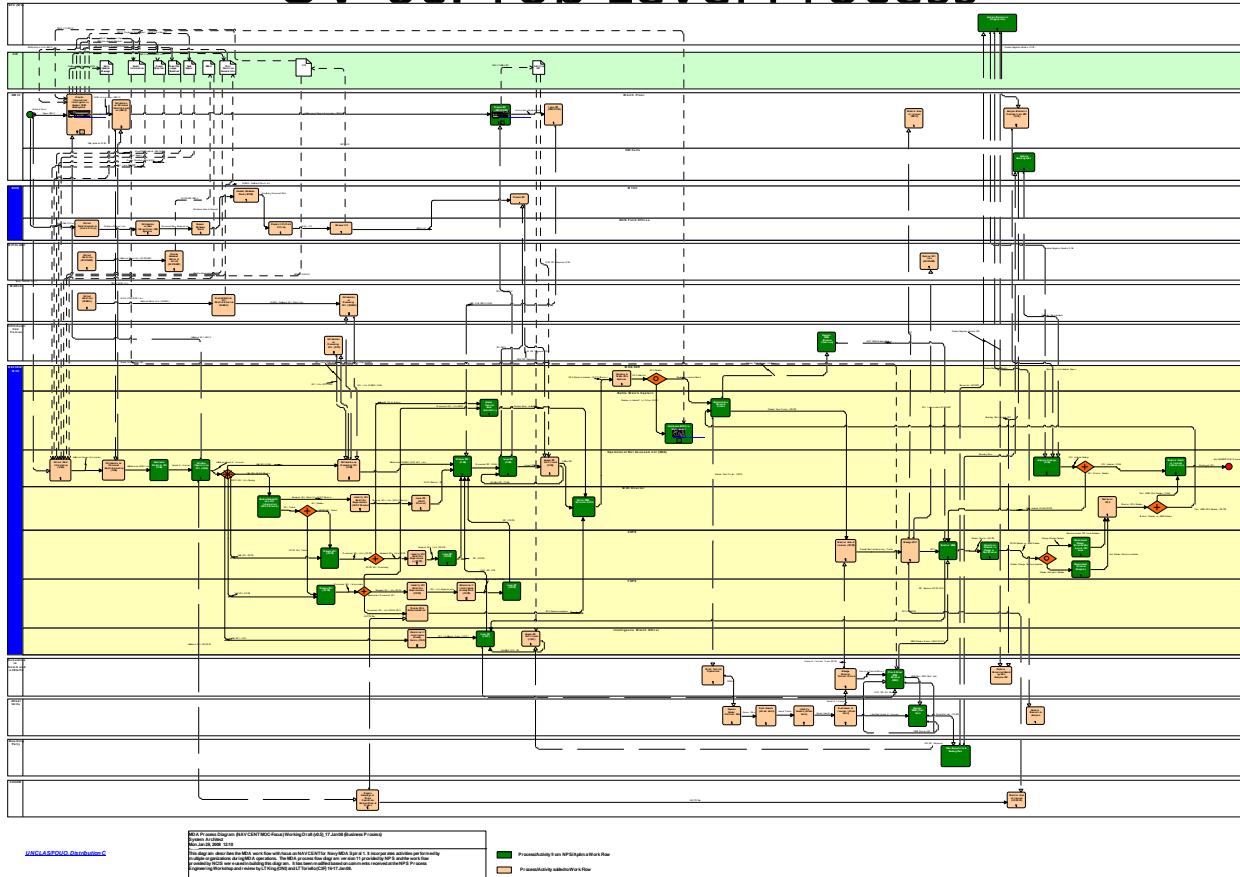




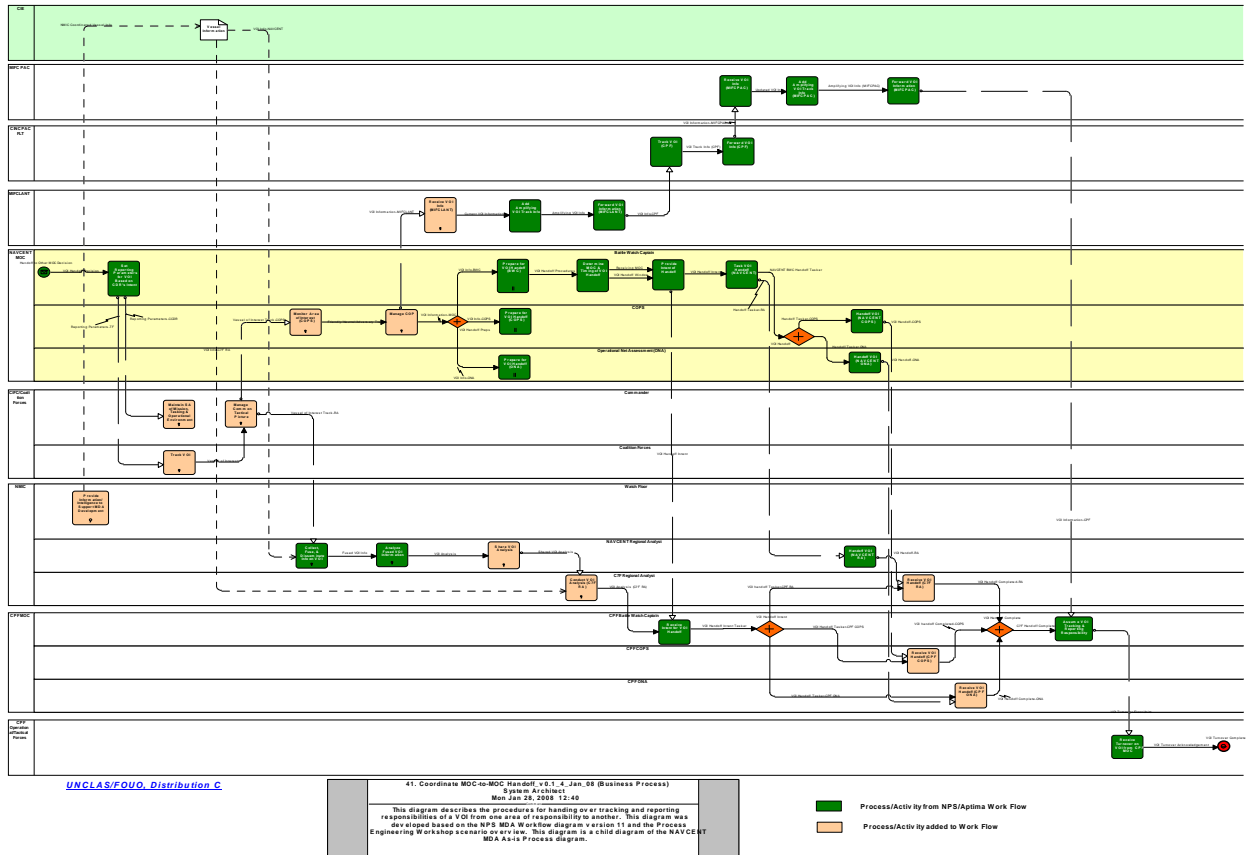
## Appendix C: MDA OV-6c

The following graphs were developed by WBB from the NPS MDA workflow data and PEW revisions. These graphs represent most or all of the PEW revisions. (The reader will need to zoom in on these graphs to read. The Top Level Process graph is easiest to read if copied and pasted into PowerPoint, expanded in size, and then viewed at 400% zoom or greater.)

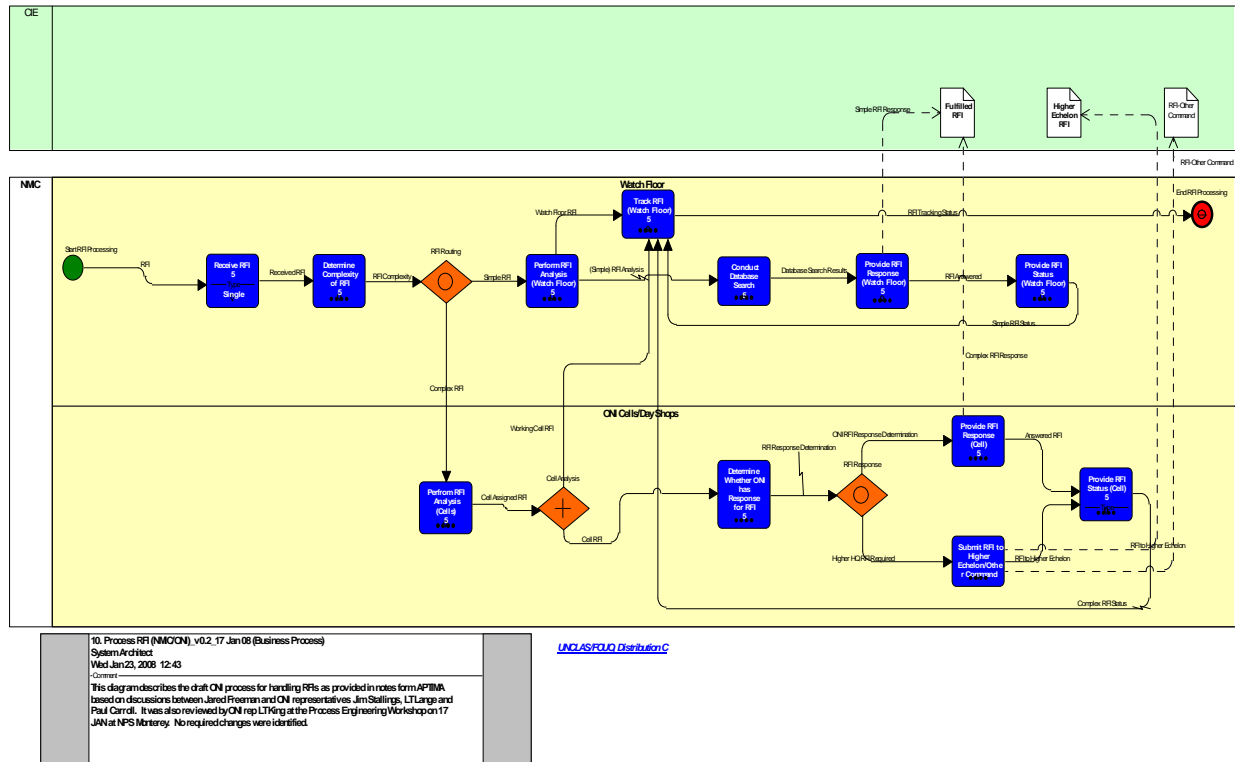
### OV-6c: Top Level Process



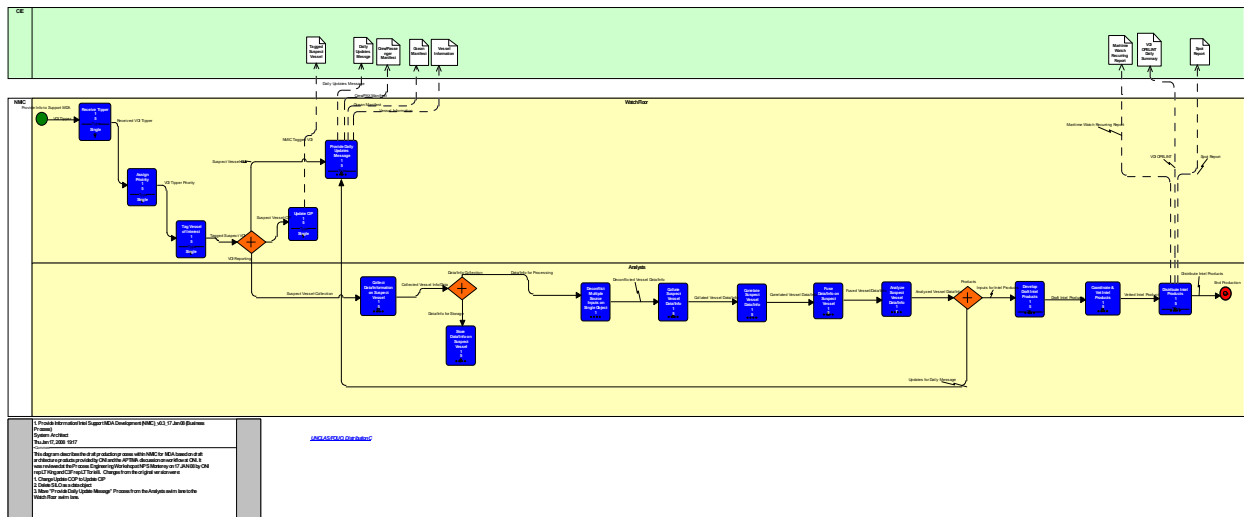
## OV-6c: Coordinate Handoff



# OV-6c: Process RFI



## OV-6c: Provide Info/Intel



## Appendix D: Technology Descriptions

Technology SMEs described the Spiral 1 products to PEW participants. These descriptions are summarized here.

### CMA

Vessel tracking and history from 350 databases. Features include search agents, confidence reporting, Level 1 multi-int fusion, remote access.

Caveats: Utility depends on how and when data are processed by the data source. Note also that source data may be needed in some domains, but CMA does not provide it on the General Service (GENSER) side, though it does on the FBI law enforcement side.

Recent areas of technology improvement are: queries, defining areas of interest, subscriptions.

### TAANDEM

Anomaly detection that delivers alerts through the CMA or GCCS user interface, with drill down to evidence. Note that an anomaly is defined as a violation of prototypical behavior of a specific class of the track within the context of geography and time of year or sea conditions; e.g., too fast, off a Great Circle route, deviations not accounted for by sea state, rendezvous by vessels when neither is a tanker, stopping to reroute. May also be used to predict VOI location in order to task a VBSS team or ISR asset.

Caveats: TAANDEM currently generates a large number of false alarms.

### MAGNET

A Coast Guard enterprise system that allows data concerning vessels, cargo, and people from multiple participating databases to be accessed and flow across identified networks. Information can then be retrieved using operator-defined agents for routine search (e.g., weather in region X), anomaly detection (e.g., any vessel passing within a defined region, mismatches of ship info), and alerting of a user-defined list of recipients (e.g., any Captain of a Port)

### FastC2AP

Anomaly detection from SEAWIRE, AIS, and other data via user-configurable scraping agents. Provides ship imagery and monitoring of chat. Publishes alerts to anyone in the enterprise. May also be used to predict VOI location in order to task a VBSS team or ISR asset.

Caveats: Intended to be used on-demand, not for monitoring (as is the case in TAANDEM).

### Global Trader

Supports queries about cargo data and several types of automated analyses: anomaly detection (statistical and machine learning), pattern matching, and clustering. Provides alerts with supporting evidence. Operates over 1.5 million transactions in a growing database.



### Tripwire

Mines unstructured text data and alerts analysts to messages of interest, based on user-defined, persistent alerting rules. Provides access to historical data (not available in CMA).

### PAELOMON

Mines unstructured data to generate link analyses, such as networks that relate a suspect person to other people, vessels, ports of call, etc. It mines classified messages and open source data, including text and imagery.

Note: PAELOMON's application to MDA activities was not addressed at the PEW because this was not a known MDA Spiral 1 technology in advance of the PEW.

### E-MIO Wireless

Satellite transmission/reception for non-biometric unclassified boarding data (manifests, etc.). Automatically ingests data into authoritative databases. To be issued to coalition partners.

### Google Apps & Chat

Alerts, chat, blogs, calendar, tabbed web portal, and productivity tools. Data are stored in a secure Navy enterprise maintained by Google. Supports data sharing between the Navy, Dept. of State, Dept. of Justice, etc.

Caveats: The Navy has purchased 5000 licenses for Spiral 1. Intended for humanitarian assistance and disaster relief.

### Google Earth

Provides global mapping via NIPR, CENTRIX and/or SIPRNET. Google Fusion fuses data for display via a streaming server.

Caveats: Spiral 1 will provide users with a programmer's interface and instructions, but no applications.

### SMS/JPSC2

Port & coastal surveillance in an unclassified COP via radar feeds from Homeland Security and other sources.

### LInX

Provides access to law enforcement data. Data included are: arrest, traffic, bookings, warrants, pawns, field interviews, investigations

Caveats: Data are organized into separate databases by US region. Sharing agreements are bilateral, thus any sharing outside each bilateral agreement must be negotiated.

Access is only to NCIS and law enforcement, and it is read-only.

### Australian AIS

Australian AIS data feed indicates location of ships operating within the Australian operating area.

## Appendix E: Attributes of MDA Activities

The following notes, captured during a review of the process diagrams, provide additional detail concerning some of the MDA processes.

**\* Process: 10: MARLO: Intel**

**\* Process: 20: CIFC: Intel**

**\* Process: 30: NCIS: Intel**

- \* As is
- \* From/To:
  - \* From: NCIS
  - \* To: MTAC, NAVCENT (or other local authority)
- \* Overall Process:
- \* Purpose/Outputs:
  - \* Tipper designating a Person of Interest
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* Host nation security contacts NCIS (HUMINT)
  - \* 2. From whom do you receive the trigger? (format, technologies)
    - \* Emirate security
    - \* Port security
    - \* Other sources
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \* Person and event received via standard reports
    - \* Personnel background via LInX
    - \* Gather additional data via FP Portal
    - \* Conduct namecheck via various dbs (NCIC, NLETC, DCII, IW, NCTIDE, Guardian, KN, etc., Diplomatic information network, ONI)
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
    - \* The agent on the ground in country can do this via FP Portal, but it will take hours to do so because it is a labor intensive search of seven separate portals. An agent arrives at port before any ship, works with law enforcement there, then develops report after ship leaves port. There is an approved format for the report.
    - \* A central office may do the processing if the agent can't or is not available.
  - \* 7. Rules / guidance?
  - \* 8. How data fused? (format, technologies)

\*Process through LInX to see if there is information about a target person; then look for hits through the FP Portal.

\* Other

\* Release of info:

\* 9. What info is released? (content / type, format, technologies)

\* Intelligence Information Report on a person of interest (Secret)

\* 10. To whom is info released?

\* DIA data network

\* Chat and Email to MTAC, National Counter Terrorism Center (NCTC), and many others

\* For a WMD: NCIS HQ manages investigations conducted by a Crisis Action Center (CAC) in DC (action team). The whole Navy reporting chain would be involved.

\* 11. Rules / guidance?

\* If person of interest is related to suspect groups or a vessel of interest, then report, per Priority Information Requests (PIR)

\* When in doubt, put it out.

\* 12. Any follow-up / tracking?

\* Impact / Requirements:

\* 13. What is the frequency of process/task?

\* Currently more than NCIS can handle

\* 14. What is the duration of process/task?

\* For bar fight: <24 hours to get to the jail and rapidly do a db check for suspects

\* 48 hours in average for a tipper (non-WMD)

\* For link to WMD network: release immediately, then 24 hours to decide whether to set up a CAC; additional processing 2 hrs – 2 weeks

\* 15. How many FT staff are required?

\* More than are available

\* 16. What improvements (if any) to make more efficient?

\* Staff in all ports. We can't cover all the ports, even if we have the technology.

\* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs

\* Policy and restric sharing/releasing information Law Enforcement Sensitive information about a US Citizen

\* For to be processes:

\* 18. Which Spiral-1 technologies would improve this process?

\* 19. How would the process be improved?

\* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

\* **Process: 40: ONI: Intel**

\* As is

\* From/To:

- \* From: ONI
- \* To: Fleet commands
- \* Overall Process:
- \* Purpose/Outputs: '109' daily report regarding VOI (vessels of interest)
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* NCIS person of interest
  - \* 2. From whom do you receive the trigger? (format, technologies)
    - \* NCIS
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \* Person of interest
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
    - \* Identify the vessels
  - \* 7. Rules / guidance?
    - \* WMD proliferation, high interest shipping list, other criteria
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* VOI, consisting of CAT1-4 and priority levels (priorities but not categories vary by organization, e.g., CG vs. Navy vs. Coalition) via 109, F2F, Phone, Email, Chat, NORTHCOM portal, GCCS, etc. (In the future, this may be transmitted vs. the SILO). Note that the CG cares about Fisheries, vessels of interest.
    - \* Crew manifest
  - \* 10. To whom is info released?
    - \* All recipients (e.g., COCOMS) of 109 report re: VOIs headed to US.
  - \* 11. Rules / guidance?
    - \* ONI SOPs, executive order
    - \* VOI categories noted on a fairly informal list prepared via Navy – Coast Guard collaboration – in wide use across the Fleet
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* 5-10 VOIs / day
    - \* The international 109 contains ~300 VOIs
    - \* NORTHCOM AOR has ~9 VOIs day
  - \* 14. What is the duration of process/task?
    - \* ~6 hours
  - \* 15. How many FT staff are required?

- \* 16. What improvements (if any) to make more efficient?
- \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process 45: COCOM: MOTR**
  - \* As is
    - :
  - \* From/To:
    - \* From: ONI
    - \* Done By: COCOM
    - \* To: PACFLT
  - \* Overall Process:
    - \* Maritime Operations Threat Response makes and disseminates a decision concerning a national priority incident across 20 agencies over a variety of events.
  - \* Purpose/Outputs:
    - \* Allocate assets to execute mission
  - \* Start process:
    - \* 1. What is the trigger for the process/task?
      - \* WMD likely
    - \* 2. From whom do you receive the trigger? (format, technologies)
      - \* ONI
    - \* 3. Frequency / accuracy of trigger?
  - \* Processing:
    - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
      - \* '109' daily report
    - \* 5. What sources greatest value / priority?
    - \* 6. Who processes? Vetting?
      - \* SECDEF, COCOM et al.
      - \* A MOTR call
        - \* Participants: DHS (CG), COCOM, Dept. Justice (FBI), Dept State watch desk for the country. The call is on SIPRNET. It addresses the issues concerning the incident. However, some entities may not join in on some calls, e.g., re: fishing incidents.
        - \* Medium: The "red switch" allows other countries to participate.
        - \* Focus: What is the action to achieve our end state. e.g., now that we've boarded a WMD-suspect vessel, what do we want to do with the vessel? Sink it. Send it back to Port

- \* Technologies:
  - \* Portal -- for info and chat that support event management.
  - \* Diesel -- Dynamic sync event log, COP pictures, briefings. Used by FBI, CIA, NORTHCOM, and others. Now stores 64 categories of events including Maritime (2), and natural disasters (e.g., bridge collapse).
- \* Leads
  - \* Warfare
  - \* Civil Support
  - \* WMD -- DoD does not lead these
- \* 7. Rules / guidance?
  - \* If WMD then order specific actions
- \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* Orders, assets to respond
  - \* 10. To whom is info released?
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 50: Int'l Maritime Bureau: Intel**
- \* **Process: 55: MOC COP: Nominate potential VOI**
  - \* As is
  - \* From/To:
    - \* From:
      - \*MOC
      - \*internal to MOC; other MOCs
    - \* To:
  - \* Overall Process:
    - \* Detect potential VOI in daily monitoring of AOR. Nominate internally and externally.
  - \* Purpose/Outputs:

- \* Nomination for VOI.
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* Anomalous activity
    - \* Reports from adjacent AORs
  - \* 2. From whom do you receive the trigger? (format, technologies)
    - \* All sources for 109s, handoffs, AOR
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \* 109 -- list of VOIs headed ot US ports
    - \* Handoff plans
    - \* Adjacent AOR reports
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
  - \* 7. Rules / guidance?
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* ONI watch (We're monitoring)
    - \* MIFCPAC (Coast Guard)
    - \* PACFLEET intel
    - \* Adjacent AOR
  - \* 10. To whom is info released?
    - \* ONA
    - \* Network Centric
    - \* Battlespace Awareness
    - \* Command and Control
    - \* Force Protection (depending)
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* 3-4 VOIs being tracked daily at CAT2
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?



- \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 60: ONA: VOI**
  - \* As is:
  - \* From/To:
    - \* From: ONA
    - \* To: MOC BWC
  - \* Overall Process:
  - \* Purpose/Outputs: quality information for COA planning
  - \* Start process:
    - \* 1. What is the trigger for the process/task?
      - \* ONI 109
      - \* Orders (from COCOM to PACFLEET to 3rd Fleet) to handle this track from PACOM/PACFLEET, which invoke 3rd Fleet's (all items that follow) OPINTEL, OPORT, Collection Manual, EMIO OPORD
    - \* 2. From whom do you receive the trigger? (format, technologies)
      - \* Varies by site. For NorthCOM, the intel work.
      - \* Note: Most VOIs specified in DC, not at MOC. Local MOC may upgrade a VOI. NAVCENT sometimes originates a VOI.
    - \* 3. Frequency / accuracy of trigger?
      - \* daily reports
  - \* Processing:
    - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
      - \* ONI 109
      - \* Orders to handle this track from PACOM/PACFLEET, which invoke 3rd Fleet's (all items that follow) OPINTEL, OPORT, Collection Manual, EMIO OPORD
      - \* MTAC threat information
      - \* GCCS SCI / GCCS-M (4.0.1.0P
      - \* COPS over SIPRNET
      - \* Daily briefs
      - \* CNO intel plot
      - \* ASA Maritime ELINT Correlator
      - \* GALE Lite
      - \* MIFCPAC Common intel picture (which is linked to SEALINK at ONI)
      - \* Ship architecture (for eventual use by boarding team)
      - \* Maritime Threat Response Portal (NORTHCOM's new collaborative environment/portal)
      - \* Email, Chat, Phone
      - \* Vessel ownership and related data
      - \* Incoming handoffs

- \* Info about a PMIC: Potential Maritime Intel Collector -- A foreign vessel that is equipped to collect intel
- \* 5. What sources greatest value / priority?
  - \*priority based on designation – potential WMD the highest
  - \*priority also based on relevant to each AOR
- \* 6. Who processes? Vetting?
  - \* COCOM (e.g., NORTHCOM)
  - \*analysis by Intel team
- \* 7. Rules / guidance?
  - \*based on rules for RFIs
- \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* 2-10/day
  - \* 14. What is the duration of process/task?
    - \*within hours for the national-level list
    - \*also tied to reporting thresholds for entry to relevant ports (e.g., filed 24, 96 hours prior to entry)
  - \* 15. How many FT staff are required?
    - \* Note that only one person performs this task at PACFLEET
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 70: MOC Director: Receive VOI**
  - \* Note: This task may specify which VOI is a Critical Contact of Interest
- \* **Process: 80: COPS Director or BWC: PROCESS VOI**
  - \* Note: 3rd Fleet does not break things down by COPS/FOPS
- \* **Process: 90: FOPS: Process VOI**
  - \* Note: 3rd Fleet does not break things down by COPS/FOPS
- \* **Process: 100: BWC: Assess tactical assets**
  - \* As is
  - \* From/To:
    - \* From: COCOM
    - \* To: 3<sup>rd</sup> Fleet, 7<sup>th</sup> Fleet, 5<sup>th</sup> Fleet
- \* Overall Process:

- \* Purpose/Outputs:
  - \* Identify Blue force assets that may be relevant to a response. Note that the COCOMs can allocate ISR assets and tactical assets in many cases.
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* ONI's '109' report
    - \* MTAC information
    - \* Intelligence Information Reports (IIRs)
    - \* MIFCPAC publications on web
  - \* 2. From whom do you receive the trigger? (format, technologies)
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \* Capability and availability of assets
    - \* Overt collection directed from COCOM
  - \* 5. What sources greatest value / priority? \* 6. Who processes? Vetting?
    - \* MOC Intel & Watch floor
    - \* May collaborate with COCOM
  - \* 7. Rules / guidance?
    - \* OPORD / OPTASK
    - \* Intel / Collection manual
    - \* EMIO joint documents
  - \* 8. How data fused? (format, technologies)
    - \* Crypto, ELINT coordinator use GCCS-M, GALE LITE
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* Warning to Fleet of pending activity
  - \* 10. To whom is info released?
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
    - \* The means (e.g., satellites) may not be available.
    - \* Delays in '109' reports
    - \* Multiplicity of messages types; different cycles for different types of messages
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?

- \* 19. How would the process be improved?\*
- \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

**\* Process: 110: MOC Director: Define COA**

- \* This includes defining CDRs Estimate & interaction with ONA.

**\* Process: 115: MOC-MOC Handoff**

- \* As is
- \* From/To:
  - \* From: NAVCENT
  - \* To: 3<sup>rd</sup> Fleet
- \* Overall Process:
- \* Purpose/Outputs:
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* genesis resides with ONI or tipper from ONI
  - \* 2. From whom do you receive the trigger? (format, technologies)
    - \* ONI. Can't underplay the role of ONI. Any transference from org to org, ONI as hub. Ships move slowly, so there isn't a COPs to COPs or ONA to ONA transfer. Transferred through ONI. All watching the vessel come near. Look to ONI on daily basis as it moves to and from chop lines. ONI as keepers of database
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \* internal process has changed recently. Still have COPs, ONA, BWC, MOC IWO, FOPs (eg slow tracking vessel from San Diego would be sent to FOPS); if from 7th FLT would work with COPs as is closer. 3rd FLT would probably be FOPS, PACFLT generally would be COPs.
    - \* Fast pace = ONA to ONI Battlewatch via NSTS. Or slower track, gen not NSTS, work via SIPR, JWCIS, Chat to contact ONI watch -- use multiple systems. Day watch primarily NSTS. JWICs predominant over SIPR or NIPR.
    - \* CIFIC is involved in the majority of cases; most of the ships approached or boarded is coalition operation. Primary medium is CENTRIX. MOC and CIFIC = MSO: US personnel embedded at CIFIC. They coordinate operations. US only when cannot share the information. CIFIC is present in MSO (who is a functional group); ONI rep does business in the MSO; sharing info on a continual basis. Primary comms through CENTRIX. 5th to 7th FLT or 3rd -- no CENTRIX enclaves. Then COPs watch floor and exchanged through them.
  - \* 5. What sources greatest value / priority?
    - \* Message traffic from ONI; ONA to ONI watch floor NSTS or Chat. Once COI heading our way, watch through PACFLT.
  - \* 6. Who processes? Vetting?

- \* ONA--assign a group (have 4 groups dependent on seriousness to natl security. A = bio -- more severe. Also a group for unk severity. Also confidence level as to intel surrounding the vessel -- high to low. 3 confidence levels.
- \* if not high enough group, confidence or resources, will assign it to a resource category (ONI operational category)
- \* At COPs it's a resource allocation problem. They decide if high enough priority and confidence AND with resources to board. May have to retask a surface asset from far away. Say transit from PACFLT. At COPS level, going from us to PACFLT
- \* 7. Rules / guidance?
  - \* Data sharing limitations with coalition. Underscore the importance -- probably the biggest challenge is info flow with coalition. Have some TTPs and SOPs -- daily challenge.
- \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* Data material (digital) handling: Digital evidence forwarded directly to ONI for processing, we are cc'd. Response to battletwatch or directly to boarding teams. Connectivity with them up and down so unreliable. Reposed where? CIFIC has local repository of info; processed locally if possible and will provide info directly to boarding team. If can't handle, go to national databases, brokered by ONI, to assist in getting info back.
  - \* 10. To whom is info released?
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
    - \* National collection agencies; there is a crisis point and have lost track --something must be done NOW. This would be direct contact situation (without ONI as glue). Lost location and must re-locate.
    - \* Tactical level (e.g., boarding party). Speed is everything. A team alongside or boarded -- increased risk with increased time they are there. Clunky architecture going between levels of command. Best of cases tactical to national info flow can take 4 hours, can be much much longer. The team is there the entire time waiting for data to come back. Need to find the architecture / process / techno and get info transferred and answers back in

reasonable time (30 min or less) would increase efficiency & decrease time!!

\* Trying to access data from the national database in prep for a boarding. Last 4-5 years has been a problem. Connectivity DDG or even carrier. To work into and access national database at ONI. Any reachback? Put together briefs for CO who may need that info but the tactical folks may have trouble reaching to us to access the information.

\* For to be processes:

\* 18. Which Spiral-1 technologies would improve this process?

\* Note: TAANDEM etc. may be useful to alert if a handoff is bungled.

\* Note: The Technologies useful here would be used mainly for briefing

\* 19. How would the process be improved?

\* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

**\* Process: 120: IWO Process or issue RFI**

\* As is:

\* From/To:

\* From:

\* Done by:

\* To:

\* Overall Process:

\* Purpose/Outputs:

\* Resolve inconsistencies or gaps in intel, to serve a potential boarding party

\* Start process:

\* 1. What is the trigger for the process/task?

\* 2. From whom do you receive the trigger? (format, technologies)

\* 3. Frequency / accuracy of trigger?

\* Processing:

\* 4. What info do you receive/request from external / internal? (who, format, technologies)

\* Information about the vessel via Phone, Email, Chat, Coliseum , Web portal to ONI (who may in turn spin off an RFI to others such as biometrics (e.g., does he speak English) RFI to the ONI biometrics cell or to MTAC/NCIS)

\* Will crew be benign

\* Is the ship equipped to resist boarding

\* Is the boarding to be opposed / unopposed. (E.g., hide, secure self, fire on boarding party)

\* Does the suspect speak English

- \* Note that Northcom may coordinate with NAVNORTHWEST (which is 3rd Fleet) under a different hat
- \* 5. What sources greatest value / priority?
- \* 6. Who processes? Vetting?
- \* 7. Rules / guidance?
- \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
    - \* Response that is an answer to RFI
    - \* Response that there is no answer to your question
    - \* Response that your 3rd Fleet should pursue with local assets
    - \* If CCIR, then answer may be no.
  - \* 10. To whom is info released?
    - \* PACFLEET, NORTHCOM,
    - \* MIFCPAC (Coast Guard)
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* Many times daily for informal RFIs in a crisis mode (Formal RFIs take too long)
    - \* 1x monthly in a non-crisis mode (e.g., my fix on a VOI is 3 days old, where do you have them?)
    - \* 3-10 RFIs daily for MDA+non-MDA
  - \* 14. What is the duration of process/task?
    - \* Hours
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
    - \* Slow response
    - \* No response to be got
    - \* Ignored
    - \* Insufficient assets to get the info
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 125: ONI issues RFI to MOC**
  - \* As is/To be:
  - \* Date:
  - \* From/To: ONI NAVCENT MIFCLANT NCIS MIFCPAC CPF C3F
    - \* From:
    - \* To:

- \* Overall Process:
- \* Purpose/Outputs:
  - \* Obtain information from local MOC and Fleet assets
  - \* ONI may issues an informal RFI – formal RFI would be very unusual
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \* RFI requiring local information
  - \* 2. From whom do you receive the trigger? (format, technologies)
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
    - \* ONI passes RFI to local
  - \* 7. Rules / guidance?
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
    - \* Local liaison (ONI LNO), ONA
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* Rare: Several times monthly or annually. Especially rare if ONI has ONA's data available locally via Spiral 1 technologies.
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 130: ONA: Process RFI**
  - \* Sometimes in response to a brief or in telecons or through LNOs.
- \* **Process: 140: ONI: Process RFI**
  - \* See also the ONI OV-6C diagram
  - \* See PACOM & PACFLEET collection management plans
  - \* As is
  - \* From/To:
    - \* From: MOC



- \* To: ONI
- \* Overall Process:
- \* Purpose/Outputs:
  - \*responses to BWC inquiries
- \* Start process:
  - \* 1. What is the trigger for the process/task?
    - \*Need for information to resolve inconsistencies re threat or location
  - \* 2. From whom do you receive the trigger? (format, technologies)
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
    - \*phone, chat, emails, Colliseum
    - \*may also through the chain of command make a CCIR
  - \* 5. What sources greatest value / priority?
    - \*ONI
    - \*ONI may in turn RFI MTAC
    - \*NCIS rep at the MOC may RFI NCIS
    - \*(might also be able to gather info from MIFC)
  - \* 6. Who processes? Vetting?
    - \* J2 (as 3rd flt and as NAVNORTHWEST) directly with NCOM
    - \*COCOM helps with general gaps in coverage
  - \* 7. Rules / guidance?
    - \*SOPs specify colliseum but other methods used
    - \* PACOM & PACFLT have TTPs regarding collection RFIs
    - \*@flt may use only local resources (vs. national resources)
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
    - \*released to MTRIP (Maritime Threat Response Portal) – all who are monitoring can see it (NOTE that process is not well-defined)
  - \* 11. Rules / guidance?
    - \* GMSA, GMII (per NCOM) & release of information [HUB which organizes collections for vessels -- would come to ONI]
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \*3-10 RFIS per day from a MOC (not all re VOI)
    - \*non-crisis mode: probably 1 VOI per month –usually want to update location
    - \*can get updates re: CCIRs every hour
  - \* 14. What is the duration of process/task?

- \* 15. How many FT staff are required?
- \* 16. What improvements (if any) to make more efficient?
- \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
  - \*Informal RFIS may bet 'blown off'
  - \*Tracking of blue forces is difficult
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

**\* Process: 150: NCIS, CIFIC, MARLO, NGA: Process RFI**

- \* Add MIFCPAC (USCG) to the list

**\* Process: 160: BWC: Comm orders**

**\* Process: 170: 5th Fleet: Execute VBSS mission**

**\* Process 175: ISR Data Collection**

- \* As is
- \* From/To:
  - \* From:
  - \* To:
- \* Overall Process:
  - \* Collect data using UAVs, P3, fly-by, steam-by, and other ISR methods
- \* Purpose/Outputs:
- \* Start process:
  - \* 1. What is the trigger for the process/task?
  - \* 2. From whom do you receive the trigger? (format, technologies)
  - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
  - \* 7. Rules / guidance?
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?

- \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
    - \* Preparing for VBSS may require SEAPORT, but they won't have that tech. (verify)
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process: 180: 5th Fleet: Take Biometrics**
  - \* As is
  - \* From/To:
    - \* From: boarding party > watch
    - \* To: Biometric Fusion Center (East Coast)
  - \* Overall Process:
  - \* Purpose/Outputs:
    - \* Fingerprints, iris prints, face pictures, etc.
  - \* Start process:
    - \* 1. What is the trigger for the process/task?
      - \* COA with instructions re persons of interest
      - \* Note that this starts in parallel with taking non-biometric boarding data
    - \* 2. From whom do you receive the trigger? (format, technologies)
      - \* Chain of command
    - \* 3. Frequency / accuracy of trigger?
  - \* Processing:
    - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
      - \* Request for biometrics
      - \* Biometrics (fingerprints, iris, face image, etc.) from ship passengers and crew
      - \* Permission from COCOM to take biometrics on this individual
    - \* 5. What sources greatest value / priority?
    - \* 6. Who processes? Vetting?
      - \* Boarding Party
    - \* 7. Rules / guidance?
    - \* 8. How data fused? (format, technologies)
  - \* Release of info:
    - \* 9. What info is released? (content / type, format, technologies)
    - \* 10. To whom is info released?
      - \* BFC
      - \* NAVCENT
    - \* 11. Rules / guidance?
      - \* Dependent on criminality + citizenship of persons of interest
    - \* 12. Any follow-up / tracking?

\*Initially receive back (from Process #200/205) only 'Match' or 'No Match' – 'Match' requires follow-up analysis.

\* Impact / Requirements:

- \* 13. What is the frequency of process/task?
  - \* 1x per individual per relevant boarding
- \* 14. What is the duration of process/task?
  - \* 7-10 minutes turn around from transmission from mother ship to return (from Process #200/205)
  - \* (To-be standard is 7-10 mins from collection to return)
  - \* 24 hours turnaround for biometric data from start of boarding party -> ribb -> mother ship -> BFC and back
  - \* 1-3 days to get permission to take biometrics
- \* 15. How many FT staff are required?
- \* 16. What improvements (if any) to make more efficient?
- \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
  - \* Radar jams wireless transmissions
  - \* Bad sea state from boarded ship to mother ship
  - \* Firing conditions

\* For to be processes:

- \* 18. Which Spiral-1 technologies would improve this process?
- \* 19. How would the process be improved?
- \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

\* **Process: 190: MOC: Forward Biometrics**

- \* Rename this Receive copy of biometrics

\* **Process: 200: BFC (WV): Analyze biometrics**

\* **Process 205: Analyze biometric data**

- \* As is
- \* From/To:
  - \* From: Biometric Fusion Center (East Coast)
  - \* To: watch > boarding party

\* Overall Process:

\* Purpose/Outputs:

\* Start process:

- \* 1. What is the trigger for the process/task?
- \* 2. From whom do you receive the trigger? (format, technologies)
- \* 3. Frequency / accuracy of trigger?

\* Processing:

- \* 4. What info do you receive/request from external / internal? (who, format, technologies)
- \* 5. What sources greatest value / priority?
- \* 6. Who processes? Vetting?
- \* 7. Rules / guidance?
- \* 8. How data fused? (format, technologies)

- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
    - \* Army National Ground Intelligence Center
    - \* NOT to Coast Guard or International Partners or BFC because report is classified
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
    - \* 50 in last 3 years because of requirements to request taking biometrics
  - \* 14. What is the duration of process/task?
    - \* under 10 minutes for 'Match' or 'No Match'
    - \* 4 hours if no derogatory information
    - \* 72 hours if there is derogatory information to issue a biometric identity analysis report that fuses information on the individual
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
    - \* A future connection to LInX will be useful here.
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?
- \* **Process 207: NGIC: Forward biometric report**
  - \* Army National Ground Intelligence Center forwards ONI report to fleet
- \* **Process: 210: ONI: Analyze boarding data**
  - \* Note that Google and some other technologies don't play here because the data are classified.
- \* **Process: 220 5th Fleet: Take boarding data**
  - \* 18 data objects including cargo manifest, crew manifest, etc.
- \* **Process: 230: ONA Analyze Findings**
- \* **Process: 240: CIFIC: Execute VBSS Mission**
  - \* Note: Coalition partners may use SEAPORT here.
- \* **Process: 250 COPS: Monitor VBSS**
  - \* Note: There's nothing to monitor with Spiral 1 technology since the fleet entities executing this mission do not have Spiral 1 technology, and thus they can't feed data into the system.
- \* **Process: 260: MOC Change mission**
  - \* Note: Spiral 1 technologies have no role in making this decision.
- \* **Process: 270: MOC: Complete mission**
  - \* Note: Spiral 1 technologies have no role in making this decision.

**\* Process: 280: ONA: Monitor VOI**

- \* As is
- \* From/To:
  - \* From: ONA
  - \* To: (coalition partners only – see #10 below)
- \* Overall Process:
- \* Purpose/Outputs:
- \* Start process:
  - \* 1. What is the trigger for the process/task?
  - \* 2. From whom do you receive the trigger? (format, technologies)
    - \* 3. Frequency / accuracy of trigger?
- \* Processing:
  - \* 4. What info do you receive/request from external / internal? (who, format, technologies)
  - \* 5. What sources greatest value / priority?
  - \* 6. Who processes? Vetting?
  - \* 7. Rules / guidance?
  - \* 8. How data fused? (format, technologies)
- \* Release of info:
  - \* 9. What info is released? (content / type, format, technologies)
  - \* 10. To whom is info released?
    - \* For coalition partners, this is released over an unclassified COP: Google Earth
  - \* 11. Rules / guidance?
  - \* 12. Any follow-up / tracking?
- \* Impact / Requirements:
  - \* 13. What is the frequency of process/task?
  - \* 14. What is the duration of process/task?
  - \* 15. How many FT staff are required?
  - \* 16. What improvements (if any) to make more efficient?
  - \* 17. Failure in the process is usually associated w/...timeliness, accuracy, completeness, confliction, TTPs
- \* For to be processes:
  - \* 18. Which Spiral-1 technologies would improve this process?
    - \* If FOPS is involved, it may use CMA for planning.
  - \* 19. How would the process be improved?
  - \* 20. Are any plan / guidance / TTP improvements needed? Inter-agency?

## Initial Distribution List

- |  |   |
|--|---|
| 1. The Naval Postgraduate School<br>1411 Cunningham Road, Code 06IS<br>Monterey, CA 93943  | 1 |
| 2. Dudley Knox Library, Code 013<br>Naval Postgraduate School<br>Monterey, CA 93943-5100   | 1 |
| 3. Research Office, 09<br>Naval Postgraduate School<br>Monterey, CA 93943  | 1 |
| 4. Defense Technical Information Center<br>8725 John J Kingman Road, Suite 0944<br>Fort Belvoir, VA 22060-6218   | 2 |
| 5. CDR Dan Dunaway<br>Office of the Deputy Under Secretary of the Navy<br>1000 Navy Pentagon, Room 4E720<br>Washington, DC 20350-1000  | 1 |
| 6. Mr. Richard Volkert<br>Commanding Officer<br>(Attn: R. Volkert, Bldg 1 Rm A526)<br>Space & Naval Warfare Systems Center – Pacific<br>53560 Hull Street<br>San Diego, CA 92152-5001                    | 1 |
| 7. LTC Mark J. Gruber<br>Technical Director<br>Joint Integrated Command and Control for<br>Maritime Homeland Defense Operations (JICM)<br>JICM JT&E<br>250 South Peterson Blvd<br>Peterson AFB, CO 80914 | 1 |
| 8. CDR Brian Q. Gauck<br>Deputy Director<br>KICM JT&E<br>250 South Peterson Blvd<br>Peterson AFB, CO 80914   | 1 |

9. Mr. George Galdorisi (Via e-mail)	1
10. Dr. Douglas J. MacKinnon (Via e-mail)	1
11. Dr. Shelley Gallup (Via e-mail)	1
12. Mr. Jack Jensen (Via e-mail)	1
13. Ms. Susan Hutchins (Via e-mail)	1
14. Dr. Gordon Schacher (Via e-mail)	1
15. Mr. David Rousseau (Via e-mail)	1